Complete Summary

GUIDELINE TITLE

Vaccine preventable STDs. Sexually transmitted diseases treatment guidelines 2006.

BIBLIOGRAPHIC SOURCE(S)

Centers for Disease Control and Prevention, Workowski KA, Berman SM. Vaccine preventable STDs. Sexually transmitted diseases treatment guidelines 2006. MMWR Morb Mortal Wkly Rep 2006 Aug 4;55(RR-11):69-76. [222 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Centers for Disease Control and Prevention. Vaccine preventable STDs. Sexually transmitted diseases treatment guidelines. MMWR Recomm Rep 2002 May 10;51(RR-6):59-64.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Hepatitis A
- Hepatitis B

GUIDELINE CATEGORY

Diagnosis
Prevention

Screening
Treatment

CLINICAL SPECIALTY

Family Practice
Infectious Diseases
Internal Medicine
Obstetrics and Gynecology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Managed Care Organizations
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

- To update the Sexually Transmitted Diseases Treatment Guidelines 2002 (*MMWR 2002;51[No. RR-6]*)
- To assist physicians and other health-care providers in preventing and treating sexually transmitted diseases (STDs)

TARGET POPULATION

Hepatitis A

- Men who have sex with men (MSM), including those who report having minimal or no current sexual activity
- Illegal drug users (both injection and non-injection drug users)
- Persons with chronic liver disease, including persons with chronic hepatitis B virus and hepatitis C virus infection who have evidence of chronic liver disease
- International travelers

Hepatitis B

- All persons who attend sexually transmitted disease (STD) clinics who have not been previously vaccinated
- Persons with a history of STDs
- Persons who have unprotected sex with multiple partners
- Individuals who have had sex with an injection-drug user
- Men who have sex with men
- Persons engaging in illegal injecting-drug use

- Household members, sex partners, and injecting-drug-sharing partners of a person with chronic hepatitis B virus infection
- Persons who have occupational exposure to blood
- All persons who have not been previously vaccinated who receive services in drug treatment programs and long-term correctional facilities
- All pregnant women receiving STD services
- All infants
- Previously unvaccinated children and adolescents

INTERVENTIONS AND PRACTICES CONSIDERED

Hepatitis A

Prevention

1. Hepatitis A vaccine (HAVRIX®, VAQTA®)
2. Immune globulin (IG) for intramuscular administration
3. Combination hepatitis A and B vaccination (TwinRx®)

Diagnosis

1. Serologic testing for presence of immunoglobulin M (IgM) antibody to hepatitis A virus

Treatment

1. Supportive care
2. Hospitalization

Hepatitis B

Prevention

1. Hepatitis B immunoglobulin (HBIG)
2. Hepatitis B vaccine (Recombivax HB®, Energix-B®)
3. Combination hepatitis A and B vaccination (TwinRx®)

Diagnosis

1. Serological tests for hepatitis B surface antigen (HBsAg) or presence of IgM antibody to hepatitis B core (anti-HBc) antigen or antibody to hepatitis B surface antigen (anti-HBs)

Treatment/Management

1. Confirmation of suspected acute or chronic hepatitis B virus infection with laboratory testing
2. Supportive care for acute infection
3. Prevaccination antibody screening
4. Referral for medical follow-up
5. Referral for treatment of chronic infection

6. Vaccination and postexposure prophylaxis for contacts
7. Booster vaccination (not recommended for immunocompetent persons)
8. Postexposure prophylaxis for persons exposed to blood or body fluids
9. Food and Drug Administration approved antiviral agents
10. Screening for hepatocellular carcinoma for patients with chronic hepatitis B
11. Special considerations for pregnant women and HIV-infected persons
12. Reporting of HBsAg-positive persons

MAJOR OUTCOMES CONSIDERED

- Prevalence of hepatitis A and hepatitis B infection
- Risk for hepatitis A and hepatitis B infection
- Risk for chronic infection
- Risk for death from chronic liver disease (e.g., cirrhosis or hepatocellular carcinoma)
- Development of protective antibody response
- Prevention of transmission

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Beginning in 2004, the Centers for Disease Control and Prevention (CDC) personnel and professionals knowledgeable in the field of sexually transmitted diseases (STDs) systematically reviewed evidence (including published abstracts

and peer-reviewed journal articles) concerning each of the major STDs, focusing on information that had become available since publication of the *Sexually Transmitted Diseases Treatment Guidelines, 2002*. Background papers were written and tables of evidence constructed summarizing the type of study (e.g., randomized controlled trial or case series), study population and setting, treatments or other interventions, outcome measures assessed, reported findings, and weaknesses and biases in study design and analysis. A draft document was developed on the basis of the reviews.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Consensus Development Conference)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

In April 2005, the Centers for Disease Control and Prevention (CDC) staff members and invited consultants assembled in Atlanta, Georgia, for a 3-day meeting to present the key questions regarding sexually transmitted disease (STD) treatment that emerged from the evidence-based reviews and the information available to answer those questions. When relevant, the questions focused on four principal outcomes of STD therapy for each individual disease: 1) microbiologic cure, 2) alleviation of signs and symptoms, 3) prevention of sequelae, and 4) prevention of transmission. Cost-effectiveness and other advantages (e.g., single-dose formulations and directly observed therapy of specific regimens) also were discussed. The consultants then assessed whether the questions identified were relevant, ranked them in order of priority, and attempted to arrive at answers using the available evidence. In addition, the consultants evaluated the quality of evidence supporting the answers on the basis of the number, type, and quality of the studies.

The sections on hepatitis B virus (HBV) and hepatitis A virus (HAV) infections are based on previously or recently approved recommendations of the Advisory Committee on Immunization Practices.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

Screening for HAV infection might be cost-effective in populations where the prevalence of infection is likely to be high (e.g., persons aged >40 years and persons born in areas of high HAV endemicity). The potential cost-savings of testing should be weighed against the cost and the likelihood that testing will interfere with initiating vaccination.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Some sexually transmitted diseases (STDs) can be effectively prevented through preexposure vaccination. Vaccines are under development or are undergoing clinical trials for certain STDs, including human immunodeficiency virus (HIV) and herpes simplex virus (HSV). However, the only vaccines currently available are for prevention of hepatitis A virus (HAV), hepatitis B virus (HBV), and human papillomavirus (HPV) infection. Vaccination efforts focus largely on integrating the use of these available vaccines into STD prevention and treatment activities.

Every person being evaluated or treated for an STD, who is not already vaccinated, should receive hepatitis B vaccination. In addition, some persons (e.g., men who have sex with men [MSM] and illegal-drug users) should receive hepatitis A vaccination.

Hepatitis A

Hepatitis A, caused by infection with HAV, has an incubation period of approximately 28 days (range: 15-50 days). HAV replicates in the liver and is shed in high concentrations in feces from 2 weeks before to 1 week after the onset of clinical illness. HAV infection produces a self-limited disease that does not result in chronic infection or chronic liver disease. However, 10%-15% of patients might experience a relapse of symptoms during the 6 months after acute illness. Acute liver failure from hepatitis A is rare (overall case-fatality rate: 0.5%). The risk for symptomatic infection is directly related to age, with >80% of adults having symptoms compatible with acute viral hepatitis and the majority of children having either asymptomatic or unrecognized infection. Antibody produced in response to HAV infection persists for life and confers protection against reinfection.

HAV infection is primarily transmitted by the fecal-oral route, by either person-to-person contact, or through consumption of contaminated food or water. Although viremia occurs early in infection and can persist for several weeks after onset of symptoms, bloodborne transmission of HAV is uncommon. HAV occasionally might be detected in saliva in experimentally infected animals, but transmission by saliva has not been demonstrated.

In the United States, nearly half of all reported hepatitis A cases have no specific risk factor identified. Among adults with identified risk factors, the majority of cases are among MSM, persons who use illegal drugs, and international travelers. Because transmission of HAV during sexual activity probably occurs because of fecal-oral contact, measures typically used to prevent the transmission of other STDs (e.g., use of condoms) do not prevent HAV transmission. In addition, efforts to promote good personal hygiene have not been successful in interrupting outbreaks of hepatitis A. Vaccination is the most effective means of preventing

HAV transmission among persons at risk for infection, many of whom might seek services in STD clinics.

Diagnosis

The diagnosis of hepatitis A cannot be made on clinical grounds alone and requires serologic testing. The presence of IgM antibody to HAV is diagnostic of acute HAV infection. A positive test for total anti-HAV indicates immunity to HAV infection but does not differentiate current from previous HAV infection. Although usually not sensitive enough to detect the low level of protective antibody after vaccination, anti-HAV tests might be positive after hepatitis A vaccination.

Treatment

Patients with acute hepatitis A usually require only supportive care, with no restrictions in diet or activity. Hospitalization might be necessary for patients who become dehydrated because of nausea and vomiting and is critical for patients with signs or symptoms of acute liver failure. Medications that might cause liver damage or are metabolized by the liver should be used with caution among persons with hepatitis A.

Prevention

Two products are available for the prevention of HAV infection: hepatitis A vaccine (see Table 2 in the original guideline document for recommended doses and schedules) and immune globulin (Ig) for intramuscular (IM) administration. Hepatitis A vaccines are prepared from formalin-inactivated, cell-culture—derived HAV and have been available in the United States since 1995, initially for persons aged $\geq$2 years. In 2005, the vaccines were approved by FDA for persons aged $\geq$12 months. Administered IM in a 2-dose series, these vaccines induce protective antibody levels in virtually all adults. By 1 month after the first dose, 94%-100% of adults have protective antibody levels; 100% of adults develop protective antibody after a second dose. In randomized controlled trials, the equivalent of 1 dose of hepatitis A vaccine administered before exposure has been 94%-100% effective in preventing clinical hepatitis A. Kinetic models of antibody decline indicate that protective levels of antibody persist for at least 20 years.

A combined hepatitis A and hepatitis B vaccine has been developed and licensed for use as a 3-dose series in adults aged $\geq$18 years (see Table 3 in the original guideline document recommended doses by age group). When administered IM on a 0-, 1-, and 6-month schedule, the vaccine has equivalent immunogenicity to that of the monovalent vaccines.

- Hepatitis A vaccine is available for eligible children and adolescents aged <19 years through the Vaccines for Children program (telephone: 800-232-2522).
- Ig is a sterile solution of concentrated immunoglobulins prepared from pooled human plasma processed by cold ethanol fractionation. In the United States, Ig is produced only from plasma that has tested negative for hepatitis B surface antigen (HBsAg), antibodies to HIV and HCV, and HCV RNA. In addition, the process used to manufacture Ig inactivates viruses (e.g., HBV, HCV, and HIV). When administered IM before or within 2 weeks after exposure to HAV, Ig is >85% effective in preventing HAV infections.

Preexposure Immunization

Persons in the following groups who are likely to be treated in STD clinic settings should be offered hepatitis A vaccine: 1) all MSM; 2) illegal drug users (both injecting and noninjecting drugs); and 3) persons with chronic liver disease (CLD), including persons with chronic HBV and HCV infection who have evidence of CLD.

Prevaccination Serologic Testing for Susceptibility

Approximately one third of the U.S. population has serologic evidence of previous HAV infection, which increases directly with age and reaches 75% among persons aged >70 years. Screening for HAV infection might be cost-effective in populations where the prevalence of infection is likely to be high (e.g., persons aged >40 years and persons born in areas of high HAV endemicity). The potential cost-savings of testing should be weighed against the cost and the likelihood that testing will interfere with initiating vaccination. Vaccination of a person who is already immune is not harmful.

Postvaccination Serologic Testing

Postvaccination serologic testing is not indicated because the majority of persons respond to the vaccine. In addition, the commercially available serologic test is not sensitive enough to detect the low, but protective, levels of antibody produced by vaccination.

Postexposure Prophylaxis

Previously unvaccinated persons exposed to HAV (e.g., through household or sexual contact or by sharing illegal drugs with a person who has hepatitis A) should be administered a single IM dose of Ig (0.02 mL/kg) as soon as possible but not >2 weeks after exposure. Persons who have had 1 dose of hepatitis A vaccine at least 1 month before exposure to HAV do not need Ig. If hepatitis A vaccine is recommended for a person receiving Ig, it can be administered simultaneously at a separate anatomic injection site. The use of hepatitis A vaccine alone is not recommended for postexposure prophylaxis (PEP).

Special Considerations

Limited data indicate that vaccination of persons with CLD and of HIV-infected persons results in lower seroprotection rates and antibody concentrations. In HIV-infected persons, antibody response might be directly related to CD4+ levels.

Hepatitis B

Hepatitis B is caused by infection with HBV. The incubation period from the time of exposure to onset of symptoms is 6 weeks to 6 months. HBV is found in highest concentrations in blood and in lower concentrations in other body fluids (e.g., semen, vaginal secretions, and wound exudates). HBV infection can be self-limited or chronic. In adults, only approximately half of newly acquired HBV infections are symptomatic, and approximately 1% of reported cases result in acute liver failure and death. Risk for chronic infection is inversely related to age

at infection: approximately 90% of infected infants and 30% of infected children aged <5 years become chronically infected, compared with 2%-6% of adults. Among persons with chronic HBV infection, the risk for premature death from cirrhosis or hepatocellular carcinoma (HCC) is 15%-25%.

HBV is efficiently transmitted by percutaneous or mucous membrane exposure to infectious blood or body fluids that contain blood. The primary risk factors that have been associated with infection among adolescents and adults are unprotected sex with an infected partner, unprotected sex with more than one partner, MSM, history of other STDs, and illegal injecting-drug use.

The Centers for Disease Control and Prevention's (CDC's) national strategy to eliminate transmission of HBV infection includes 1) prevention of perinatal infection through routine screening of all pregnant women for HBsAg and immunoprophylaxis of infants born to HBsAg-positive mothers and infants born to mothers with unknown HBsAg status, 2) routine infant vaccination, 3) vaccination of previously unvaccinated children and adolescents through age 18 years, and 4) vaccination of previously unvaccinated adults at increased risk for infection. High vaccination coverage rates, with subsequent declines in acute hepatitis B incidence, have been achieved among infants and adolescents. In contrast, vaccination coverage among the majority of high-risk adult groups (e.g., persons with more than one sex partner in the previous 6 months, MSM, and injecting-drug users [IDUs]) have remained low, and the majority of new infections occur in these high-risk groups. STD clinics and other settings that provide services targeted to high-risk adults are ideal sites in which to provide hepatitis B vaccination to adults at risk for HBV infection. All unvaccinated adults seeking services in these settings should be assumed to be at risk for hepatitis B and should receive hepatitis B vaccination.

Diagnosis

Diagnosis of acute or chronic HBV infection requires serologic testing (see Table 4 of the original guideline document). HBsAg is present in both acute and chronic infection. The presence of IgM antibody to hepatitis B core antigen (IgM anti-HBc) is diagnostic of acute or recently acquired HBV infection. Antibody to HBsAg (anti-HBs) is produced after a resolved infection and is the only HBV antibody marker present after immunization. The presence of HBsAg and total anti-HBc, with a negative test for IgM anti-HBc, indicates chronic HBV infection. The presence of anti-HBc alone might indicate a false-positive result or acute, resolved, or chronic infection.

Treatment

No specific therapy is available for persons with acute hepatitis B; treatment is supportive. Persons with chronic HBV infection should be referred for evaluation to a physician experienced in the management of CLD. Therapeutic agents approved by FDA for treatment of chronic hepatitis B can achieve sustained suppression of HBV replication and remission of liver disease in some persons. In addition, patients with chronic hepatitis B might benefit from screening to detect HCC at an early stage.

Prevention

Two products have been approved for hepatitis B prevention: hepatitis B immune globulin (HBIG) and hepatitis B vaccine. HBIG provides temporary (i.e., 3-6 months) protection from HBV infection and is typically used as PEP either as an adjunct to hepatitis B vaccination in previously unvaccinated persons or alone in persons who have not responded to vaccination. HBIG is prepared from plasma known to contain high concentrations of anti-HBs. The recommended dose of HBIG is 0.06 mL/kg.

Hepatitis B vaccine contains HBsAg produced in yeast by recombinant DNA technology and provides protection from HBV infection when used for both preexposure immunization and PEP. The two available monovalent hepatitis B vaccines for use in adolescents and adults are Recombivax HB® (Merck and Co., Inc., Whitehouse Station, New Jersey) and Engerix-B® (GlaxoSmithKline Biologicals, Pittsburgh, Pennsylvania). A combination vaccine (hepatitis A and hepatitis B) for use in adults, Twinrix® (GlaxoSmithKline Biologicals, Pittsburgh, Pennsylvania), also is available. The recommended HBV dose varies by product and age of recipient (see Table 3 in the original guideline document for recommended doses by age group).

When selecting a hepatitis B vaccination schedule, the health-care provider should consider the need to achieve completion of the vaccine series. Approved adolescent and adult schedules for both monovalent hepatitis B vaccine (i.e., Engerix-B® and Recombivax HB®) include the following: 0, 1, and 6 months; 0, 1, and 4 months; and 0, 2, and 4 months. A 4-dose schedule of Engerix-B® at 0, 1, 2, and 12 months is licensed for all age groups. A 2-dose schedule of Recombivax HB® adult formulation (10 micrograms) is licensed for adolescents aged 11-15 years. When scheduled to receive the second dose, adolescents aged >15 years should be switched to a 3-dose series, with doses 2 and 3 consisting of the pediatric formulation (5 micrograms) administered on an appropriate schedule. Twinrix® may be administered to persons aged $\geq$18 years at risk for both HAV and HBV infections at 0, 1, and 6 months.

Hepatitis B vaccine should be administered IM in the deltoid muscle and may be administered simultaneously with other vaccines. For adolescents and adults, the needle length should be 1-2 inches, depending on the recipient's weight (1 inch for females weighing <70 kg), 1.5 inches for males weighing <120 kg; and 2 inches for males weighing >120 kg and females >100 kg). A 22- to 25-gauge needle is recommended. If the vaccine series is interrupted after the first or second dose of vaccine, the missed dose should be administered as soon as possible. The series does not need to be restarted after a missed dose.

In adolescents and healthy adults aged <40 years, approximately 30%-55% acquire a protective antibody response (anti-HBs $\geq$10 milliunits per milliliter [mIU/mL]) after the first vaccine dose, 75% after the second, and >90% after the third. Vaccine-induced immune memory has been demonstrated to persist for at least 15-20 years. Periodic testing to determine antibody levels in immunocompetent persons is not necessary, and booster doses of vaccine are not recommended.

Hepatitis B vaccination is generally well-tolerated by the majority of recipients. Pain at the injection site and low-grade fever are reported by a minority of recipients. Evidence for a causal association between receipt of hepatitis B

vaccination and anaphylaxis exists, which is estimated to occur in 1 of 1.1 million doses of vaccine administered among children and adolescents; no deaths have been reported after anaphylaxis. Vaccine is contraindicated in persons with a history of anaphylaxis after a previous dose of hepatitis B vaccine and in persons with a known anaphylactic reaction to any vaccine component. No evidence for a causal association has been demonstrated for other adverse events reported after administration of hepatitis B vaccine.

Preexposure Vaccination

Hepatitis B vaccination is recommended for all unvaccinated adolescents, all unvaccinated adults at risk for HBV infection, and all adults seeking protection from HBV infection. For adults, acknowledgement of a specific risk factor is not a requirement for vaccination.

Hepatitis B vaccine should be routinely offered to all unvaccinated persons attending STD clinics and to all unvaccinated persons seeking treatment for STDs in other settings. Other settings where all unvaccinated adults should be assumed to be at risk for hepatitis B and should receive hepatitis B vaccination include correctional facilities, facilities providing drug abuse treatment and prevention services, health-care settings serving MSM, and HIV testing and treatment facilities. All persons who receive clinical services in these settings should be offered hepatitis B vaccine, unless they have a reliable vaccination history (i.e., a written, dated record of each dose of a complete series). In all settings, vaccination should be initiated even though completion of the vaccine series might not be ensured.

Prevaccination Antibody Screening

Prevaccination serologic testing for susceptibility may be considered to reduce the cost of vaccinating adult populations that have an expected high prevalence of HBV infection (i.e., >20%-30%) (e.g., IDUs and MSM [especially in older age groups]). In addition, prevaccination testing for susceptibility is recommended for unvaccinated household, sexual, and needle-sharing contacts of HBsAg-positive persons.

Anti-HBc is the test of choice for prevaccination testing; persons who are anti-HBc—positive should be tested for HBsAg. If persons are determined to be HBsAg negative, no further action is required. If persons are determined to be HBsAg positive, the person should be referred for medical follow-up, including counseling and evaluation for antiviral treatment (see Management of HBsAg-Positive Persons below). In addition, all household members, sex partners, and needle-sharing partners of HBsAg-positive persons should be vaccinated.

Serologic testing should not be a barrier to vaccination of susceptible persons, especially in populations that are difficult to access. In the majority of situations, the first vaccine dose should be administered immediately after collection of the blood sample for serologic testing. Vaccination of persons who are immune to HBV infection because of current or previous infection or vaccination does not increase the risk for adverse events.

Postvaccination Testing for Serologic Response

Serologic testing for immunity is not necessary after routine vaccination of adolescents or adults. Testing after vaccination is recommended for persons whose subsequent clinical management depends on knowledge of their immune status (e.g., health-care workers or public safety workers at high risk for continued percutaneous or mucosal exposure to blood or body fluids). In addition, testing is recommended for 1) HIV-infected persons and other immunocompromised persons to determine the need for revaccination and the type of follow-up testing; and 2) sex and needle-sharing partners of HBsAg-positive persons to determine the need for revaccination and for other methods to protect themselves from HBV infection.

If indicated, testing should be performed 1-2 months after administration of the last dose of the vaccine series by using a method that allows determination of a protective level of anti-HBs ($\geq$10 mIU/mL). Persons determined to have anti-HBs levels of <10 mIU/mL after the primary vaccine series should be revaccinated with a 3-dose series, followed by anti-HBs testing 1-2 months after the third dose. Persons who do not respond to revaccination should be tested for HBsAg. If HBsAg positive, the person should receive appropriate management (see Management of HBsAg-Positive Persons below); if HBsAg negative, the person should be considered susceptible to HBV infection and counseled concerning precautions to prevent HBV infection and the need for HBIG PEP for any known exposure (see Postexposure Prophylaxis below).

Postexposure Prophylaxis

Both passive-active PEP with HBIG and hepatitis B vaccination and active PEP with hepatitis B vaccination alone have been demonstrated to be highly effective in preventing transmission after exposure to HBV. HBIG alone also has been demonstrated to be effective in preventing HBV transmission, but with the availability of hepatitis B vaccine, HBIG typically is used as an adjunct to vaccination.

Exposure to HBsAg-Positive Source

Unvaccinated persons or persons known not to have responded to a complete hepatitis B vaccine series should receive both HBIG and hepatitis vaccine as soon as possible (preferably $\leq$24 hours) after a discrete, identifiable exposure to blood or body fluids that contain blood from an HBsAg-positive source (see the table below). Hepatitis B vaccine should be administered simultaneously with HBIG in a separate injection site, and the vaccine series should be completed by using the age-appropriate vaccine dose and schedule (see Table 3 in the original guideline document for recommended doses by age group). Exposed persons who are in the process of being vaccinated but who have not completed the vaccine series should receive the appropriate dose of HBIG (i.e., 0.06 mL/kg) and should complete the vaccine series. Exposed persons who are known to have responded to vaccination are considered protected and need no further vaccine doses. Persons who have written documentation of a complete hepatitis B vaccine series and who did not receive postvaccination testing should receive a single vaccine booster dose. Alternatively, these persons can be managed according to guidelines for management of persons with occupational exposure to blood or body fluids that contain blood.

Table: Guidelines for postexposure hepatitis B immunoprophylaxis of unvaccinated persons who have a discrete identifiable exposure to blood or body fluids that contain blood

Cause of Exposure	Suggested Action
Discrete exposure to an HBsAg*-positive source	
Percutaneous (e.g., bite or needlestick) or mucosal exposure to HBsAg-positive blood or body fluids that contain blood	Administer hepatitis B vaccine and hepatitis B immune globulin (HBIG)**
Sexual or needle-sharing contact of an HBsAg-positive person	Administer hepatitis B vaccine and HBIG**
Victim of sexual assault/abuse by a perpetrator	Administer hepatitis B vaccine and HBIG**
Discrete exposure to a source with unknown HBsAg status	
Victim of sexual assault/abuse by a perpetrator with unknown HBsAg status	Administer hepatitis B vaccine**
Percutaneous (e.g., bite or needlestick) or mucosal exposure to HBsAg-positive blood or body fluids that contain blood from a source with unknown HBsAg status	Administer hepatitis B vaccine**

*Hepatitis B surface antigen
**Immunoprophylaxis should be administered as soon as possible, preferably within ≤24 hours. Studies are limited on the maximum interval after exposure during which postexposure prophylaxis is effective, but the interval is unlikely to exceed 7 days for percutaneous exposures and 14 days for sexual exposures. The hepatitis B vaccine series should be completed.

Exposure to Source with Unknown HBsAg Status

Unvaccinated persons who have a discrete, identifiable exposure to blood or body fluids containing blood from a source with unknown HBsAg status should receive the hepatitis B vaccine series, with the first dose initiated as soon as possible after exposure (preferably within 24 hours) and the series completed by using the age-appropriate dose and schedule. Exposed persons who are not fully vaccinated should complete the vaccine series. Exposed persons with written documentation of a complete hepatitis B vaccine series require no further treatment.

Special Considerations

Pregnancy

All pregnant women receiving STD services should be tested for HBsAg, regardless of whether they have been previously tested or vaccinated. All HBsAg-positive pregnant women should be reported to state and local perinatal hepatitis B prevention programs. HBsAg-negative pregnant women seeking STD treatment who have not been previously vaccinated should receive hepatitis B vaccination. Additional information regarding management of HBsAg-positive pregnant women and their infants is available at http://www.cdc.gov/mmwr/PDF/rr/rr5416.pdf.

HIV Infection

HIV infection can impair the response to hepatitis B vaccination. HIV-infected persons should be tested for anti-HBs 1-2 months after the third vaccine dose (see Postvaccination Testing for Serologic Response). Modified dosing regimens, including a doubling of the standard antigen dose and administration of additional doses, might increase the response rate.

Management of HBsAg-Positive Persons

This section provides recommendations for management of all HBsAg-positive persons. Additional recommendations for management of HBsAg-positive persons who are coinfected with HIV are available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5315a1.htm.

- All persons with HBsAg-positive laboratory results should be reported to the state or local health department.
- To verify the presence of chronic HBV infection, HBsAg-positive persons should be retested. The absence of IgM anti-HBc or the persistence of HBsAg for 6 months indicates chronic HBV infection.
- Persons with chronic HBV infection should be referred for evaluation to a physician experienced in the management of CLD. Some patients with chronic hepatitis B will benefit from early intervention with antiviral treatment or screening to detect HCC at an early stage.
- Household, sexual, and needle-sharing contacts of chronically infected persons should be identified. Unvaccinated sex partners and household and needle-sharing contacts should be tested for susceptibility to HBV infection (see Prevaccination Antibody Screening above) and should receive the first dose of hepatitis B vaccine immediately after collection of the blood sample for serologic testing. Susceptible persons should complete the vaccine series by using an age-appropriate vaccine dose and schedule. Persons who are fully vaccinated should complete the vaccine series.
- Sex partners of HBsAg-positive persons should be counseled to use methods (e.g., condoms) to protect themselves from sexual exposure to infectious body fluids (e.g., semen and vaginal secretions), unless they have been demonstrated to be immune after vaccination (anti-HBs $\geq$10 mIU/mL) or previously infected (anti-HBc positive).
- To prevent or reduce the risk for transmission to others, HBsAg-positive persons should be advised concerning the risk for transmission to household, sexual, and needle-sharing contacts and the need for such contacts to receive hepatitis B vaccination. HBsAg-positive persons also should be advised to
    - use methods (e.g., condoms) to protect nonimmune sex partners from acquiring HBV infection from sexual activity until the partner can be vaccinated and immunity documented
    - cover cuts and skin lesions to prevent the spread of infectious secretions or blood
    - refrain from donating blood, plasma, body organs, other tissue, or semen
    - refrain from sharing household articles (e.g., toothbrushes, razors, or personal injection equipment) that could become contaminated with blood
- To protect the liver from further harm, HBsAg-positive persons should be advised to

- avoid or limit alcohol consumption because of the effects of alcohol on the liver
- refrain from starting any new medicines, including OTC and herbal medicines, without checking with their health-care provider
- obtain vaccination against hepatitis A if liver disease is determined to be present

When seeking medical or dental care, HBsAg-positive persons should be advised to inform those responsible for their care of their HBsAg status so that they can be appropriately evaluated and managed. Information regarding HBsAg-positive women who are pregnant is available in this report (see Special Populations, Pregnant Women, above). Other counseling messages also should be considered.

- HBV is not spread by hugging, coughing, food or water, sharing eating utensils or drinking glasses, or casual contact.
- Persons should not be excluded from work, school, play, child care, or other settings because they are infected with HBV.
- Involvement with a support group might help patients cope with chronic HBV infection.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

Throughout the 2006 guideline document, the evidence used as the basis for specific recommendations is discussed briefly. More comprehensive, annotated discussions of such evidence will appear in background papers that will be published in a supplement issue of the journal *Clinical Infectious Diseases*.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate diagnosis, management and treatment of patients who have viral hepatitis A or B
- Reduction in the risk of contacts acquiring hepatitis A or B from infected persons
- Reduction in the risk of acquiring hepatitis A or B after inadvertent exposure by means of postexposure prophylaxis
- Decreased rates of infection of viral hepatitis A or B

POTENTIAL HARMS

Hepatitis B

Pain at the injection site and low-grade fever are reported by a minority of recipients. Evidence for a causal association between receipt of hepatitis B vaccination and anaphylaxis exists, which is estimated to occur in 1 of 1.1 million doses of vaccine administered among children and adolescents; no deaths have been reported after anaphylaxis.

CONTRAINDICATIONS

CONTRAINDICATIONS

Hepatitis B vaccine is contraindicated in persons with a history of anaphylaxis after a previous dose of hepatitis B vaccine and in persons with a known anaphylactic reaction to any vaccine component.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These recommendations were developed in consultation with public- and private-sector professionals knowledgeable in the treatment of patients with sexually transmitted diseases (STDs). The recommendations are applicable to various patient-care settings, including family planning clinics, private physicians' offices, managed care organizations, and other primary-care facilities.
- These recommendations are meant to serve as a source of clinical guidance: health-care providers should always consider the individual clinical circumstances of each person in the context of local disease prevalence. These guidelines focus on the treatment and counseling of individual patients and do not address other community services and interventions that are important in sexually transmitted disease/human immunodeficiency virus (STD/HIV) prevention.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Centers for Disease Control and Prevention, Workowski KA, Berman SM. Vaccine preventable STDs. Sexually transmitted diseases treatment guidelines 2006. MMWR Morb Mortal Wkly Rep 2006 Aug 4;55(RR-11):69-76. [222 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1993 (revised 2006 Aug 4)

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

GUIDELINE DEVELOPER COMMENT

These guidelines for the treatment of persons who have sexually transmitted diseases (STDs) were developed by CDC after consultation with a group of professionals knowledgeable in the field of STDs who met in Atlanta, Georgia, during April 19–21, 2005.

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

Not stated

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Centers for Disease Control and Prevention. Vaccine preventable STDs. Sexually transmitted diseases treatment guidelines. MMWR Recomm Rep 2002 May 10;51(RR-6):59-64.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- HTML Format
- Portable Document Format (PDF)

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Workowski KA, Levine WC, Wasserheit JN. U.S. Centers for Disease Control and Prevention guidelines for the treatment of sexually transmitted diseases: an opportunity to unify clinical and public health practice. Ann Intern Med. 2002 Aug 20;137(4):255-62. Electronic copies: Available through Annals of Internal Medicine Online.
- The CDC Sexually Transmitted Diseases Treatment Guidelines 2004 for PDA or Palm OS. Available from the CDC National Prevention Information Network (NPIN) Web site.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on September 5, 2002. This summary was updated by ECRI on October 13, 2006.

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